Space Weather Forecast

Issued on Friday, 10 March 2023 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate class flares (R1-R2/Minor-Moderate radio blackouts) likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with the strongest flare, a high energy Common-class flare from a large region in the south centre disc. The only other region of note is AR3242, which has a history of significant activity, but which has recently simplified. Both AR3242 and AR3245 are large and complex bipolar regions. There are 11 sunspot regions are on the visible disc, with the remaining regions simple beta or alpha regions. A farsided halo CME (coronal mass ejection) has been observed leaving the Sun during 09 Mar but initial analysis suggests that this does not have an Earth-directed component. Further analysis is currently under way to confirm this initial analysis.

Solar Wind / Geomagnetic Activity: The solar wind speed has been at slightly elevated levels. Total magnetic field strength was weak, with a moderate period early in the 24 hours due to a weak unforecast CME. The north-south component also varied weakly, with a moderate negative period due to the CME. Geomagnetic activity was mainly Quiet to Unsettled, but was Active to G1/Minor Storm early on 09 Mar.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low to Moderate due to two large regions on the visible disc. There is also a slight chance of High activity.

Solar Wind / Geomagnetic Activity: No CMEs are forecast to affect the Earth in the next four days. A fast solar wind is expected to decline to background levels through the next 24 hours, with no further fast winds forecast. Geomagnetic activity is expected to be mostly Quiet to Unsettled (Kp 1-3), throughout the period.

Geomagnetic activity is expected to be Quiet to Unsettled throughout the period, with a chance of Active intervals today or tomorrow.

Energetic Particles / Solar Radiation: Solar radiation levels are most likely to stay at background levels, but with a slight chance of reaching the S1/Minor Storm threshold or greater should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	5	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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